

AMENDMENT

Amend the application, without prejudice as follows:

In the Drawings:

Attached hereto for approval by the Examiner are two (2) sheets of corrected drawings with proposed changes shown in red. Also attached hereto for approval by the Examiner is one (1) sheet of drawings containing new Figures 16 and 17A-17C.

In the Specification:

On page 6, after the paragraph beginning "FIGS. 15a and 15b", add the following paragraphs:

C1
--FIG. 16 is a side elevational view of a thread forming tool according to the present invention.

FIGS. 17A-17C are partial sectional views showing a tip end, a root end and an intermediate point, respectively, of the cutting edge of the thread forming tool of FIG. 16.--

On page 7, replace the paragraph beginning "As described above" with the following:

C2
--As described above, during operation, the contact between the bristles of the brush and a workpiece causes the bristles to heat up. In order to reduce the temperature of the bristles 66, one embodiment of the present invention incorporates an impeller 62 in the hub that has a series of vanes designed to draw air into the hub 60 through an air intake 64. The impeller 62 forces air out through the bristles 66 of the abrasive brush 20, thereby reducing their temperature.--

On page 9, replace the paragraph beginning "As shown in FIG. 1" with the following:

C3
--As shown in FIG. 1, a vertical movement mechanism 28 is employed which adjusts the vertical position of the motor 24 relative to the base. In one embodiment, the vertical movement mechanism 28 includes a screw driven actuator that is controlled either manually, as by a handle 46 (FIG. 1), or by a control motor 80 (FIG. 6). If a control motor 80 is utilized, the motor 24 is preferably engaged to one or more guide rails 82 through linear bearings 86. A screw 84 turned by the control motor 80 passes through a threaded fitting on the motor 24, such that rotation of the screw 84 causes the motor 24 to move up or down. It is contemplated that the

C3 movement of the motor 24 and abrasive brush 20 may be pre-programmed into a computer or other control device (such as the controller 200) to provide automated and repeatable workpiece honing.--

On page 11, replace the paragraph beginning "A further embodiment" with the following:

C4 --A further embodiment of the invention is shown in FIG. 8. In this embodiment, a mechanism for controlling the distance between a workpiece 122 and the axis of rotation 144 of the abrasive brush 120 is incorporated into the apparatus 10. Referring to FIG. 9, the position of an edge 150 of the workpiece 122 relative to the abrasive brush 120 is shown. The orientation of the workpiece edge 150 is defined by the angle δ between a side surface 168 of the workpiece 122 and a radial line 170 extending from the axis of rotation 144 of the abrasive brush 120 through the workpiece edge 150. Rotation of the workpiece 122 about the workpiece edge 150 causes the point of contact between the abrasive brush 120 and a top surface 166 and the side surface 168 of the workpiece 122 to vary, thereby controlling the resulting shape of the hone.--

On pages 11-12, replace the paragraph beginning "Referring back" with the following:

C5 --Referring back to FIG. 8, an orientation actuator 160 is used to control the orientation of the workpiece 122 (e.g., cutting tool) with respect to the abrasive brush 120. The orientation actuator 160 includes a fixed portion 160F and a rotary portion 160R. The fixed portion 160F is mounted to the base 132. The rotary portion 160R is rotatably engaged to the fixed portion 160F. The guides 136 are attached to the rotary portion 160R. The fixture 134, which holds the workpiece 122, is slidably attached to the guides 136. In order to rotate the workpiece, the orientation actuator 160 is controlled (e.g., via a controller, such as controller 200 in FIG. 1) so as to rotate the rotary portion 160R. This, in turn, causes the guides 136 and the fixture 134 to rotate about an orientation axis of rotation 162. Depending on the location of the guides 136, fixture 134 and workpiece 122, the orientation axis may lie along the workpiece edge 150. Rotation of the workpiece 122 about this axis changes the angle δ between the side surface 168 and the radial line 170. As such, the point on the workpiece edge 150 that contacts the abrasive brush 120 will vary.--

On page 13, rewrite the paragraph beginning "It is contemplated" as follows:

C6 --It is contemplated that the position and orientation of the workpiece within the volume of bristles and the speed of rotation of the abrasive brush can be altered during